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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/770,723	02/02/2004	Katsuya Tanaka	16869N-104900US	2283

20350 7590 03/14/2006

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EXAMINER

PATEL, HETUL B

ART UNIT	PAPER NUMBER
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2186

DATE MAILED: 03/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/770,723	TANAKA ET AL.	
	Examiner	Art Unit	
	Hetul Patel	2186	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 03 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 February 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This action is responsive to communication filed on February 08, 2006. This amendment has been entered and carefully considered. Claims 10-14 have been newly added and claims 1-9 are again presented for examination.
2. Applicant's arguments filed on February 08, 2006 have been fully considered but they are not deemed to be persuasive.
3. The rejection of claims 1-9 as in the previous Office Action is respectfully maintained and reiterated below for Applicant's convenience.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1-2, 6 and 14 are rejected under 35 U.S.C. 102(a) as being anticipated by Tanaka et al. (USPN: 2003/0191891) hereinafter, Tanaka.
5. Claims 1-2, 6 and 14 are rejected under 35 U.S.C. 102(e) as being anticipated by Tanaka.

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

As per claim 1, Tanaka teaches a disk device (shown in Fig. 8) comprising: a disk controller (i.e. DKC1 and DKC2 in Fig. 8) comprising a channel adapter (i.e. CHA1 and CHA2 in Fig. 8), a cache memory (i.e. CM1 and CM2 in Fig. 8), and a disk adapter (i.e. DKA1 and DKA2 in Fig. 8); and a disk array (i.e. DA1 in Fig. 8) comprising disk drives (i.e. DK1-DK4 in Fig. 8), each being equipped with a plurality of I/O ports (i.e. each disk drive equipped with two ports; see Fig. 8), wherein said disk adapter and said disk array are connected via a switch (i.e. SW1 and SW2 in Fig. 8), and wherein a destination drive I/O port, which is one of the plurality of I/O ports, to which a frame is to be forwarded is determined by the disk adapter (i.e. the disk adapter sets destination information in a frame to be transmitted so that connection between the ports is changed over), according to the type of a command included in an exchange that is transferred between said disk adapter and one of said disk drives (e.g. see paragraphs [0044]-[0045] and [0053]).

As per claim 2, Tanaka teaches the claimed invention as described above and furthermore, Tanaka discloses in paragraph [0053] as following:

[0053] Furthermore, when data is written from the disk adapter into the disk array, the disk adapter sets destination information

in a frame to be transmitted so that connection between the ports is changed over and when data is read out from the disk array to the disk adapter, the switch changes over connection between ports by the round robin method.

In other words, Tanaka teaches that when the data is written from the disk adapter into the disk array (i.e. when the command is a data write command as claimed), the connection between the ports is changed *in one way*; and when data is read out from the disk array to the disk adapter (i.e. when the command is a data read command as claimed), the switch changes over the connection between ports *in other way* by round robin method. Therefore, Tanaka reference does anticipate the claimed invention.

As per claim 6, Tanaka teaches a disk device (shown in Fig. 8) comprising: a disk controller (i.e. DKC1 and DKC2 in Fig. 8) comprising a channel adapter (i.e. CHA1 and CHA2 in Fig. 8), a cache memory (i.e. CM1 and CM2 in Fig. 8), and a disk adapter (i.e. DKA1 and DKA2 in Fig. 8); and a disk array (i.e. DA1 in Fig. 8) comprising disk drives (i.e. DK1-DK4 in Fig. 8), each being equipped with a plurality of I/O ports (i.e. each disk drive equipped with two ports; see Fig. 8), wherein said disk adapter and said disk array are connected via a switch (i.e. SW1 and SW2 in Fig. 8), and wherein said disk adapter determines destination information within a frame to be transferred from said disk adapter to one of said disk drives, according to the type of a command included in an exchange between said disk adapter and the one of said disk drives (e.g. see paragraphs [0044]-[0045]). Furthermore, Tanaka teaches that the switch (SW1 in Fig. 1) selects one of port to port connection paths between a port to which said disk adapter (DKA in Fig. 1) is connected and ports to which the disk drives (shown in Fig. 1)

constituting said disk array are connected to switch each frame inputted to the switch, according to the destination information within the frame (e.g. see paragraphs [0043]-[0044]).

As per claim 14, see arguments with respect to the rejection of claim 2. Claim 14 is also rejected based on the same rationale as the rejection of the claim 2.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 3-5 and 7-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka in view of Hashemi et al. (USPN: 5,396,596) hereinafter, Hashemi.

As per claim 3, Tanaka teaches the claimed invention as described above. However, Tanaka failed to teach the further limitation of executing said exchange for reading data and said exchange for writing data in parallel. Hashemi, on the other hand, teaches about reading and writing data in parallel/simultaneously (e.g. see Col. 7, lines 8-16 and Figs. 9-10). Accordingly, it would have been obvious to one of ordinary skill in the art at the time of the current invention was made to implement the teachings of Hashemi in the disk device taught by Tanaka. In doing so, the overall performance of the disk device is improved. Therefore, this is being advantageous.

As per claim 4, Tanaka teaches a disk device (shown in Fig. 8) comprising: a disk controller (i.e. DKC1 and DKC2 in Fig. 8) comprising a channel adapter (i.e. CHA1 and CHA2 in Fig. 8), a cache memory (i.e. CM1 and CM2 in Fig. 8), and a disk adapter (i.e. DKA1 and DKA2 in Fig. 8); and a disk array (i.e. DA1 in Fig. 8) comprising disk drives (i.e. DK1-DK4 in Fig. 8), each being equipped with a plurality of I/O ports (i.e. each disk drive equipped with two ports; see Fig. 8), wherein said disk adapter and said disk array are connected via a switch (i.e. SW1 and SW2 in Fig. 8) (e.g. see paragraphs [0044]-[0045]). As described above in the rejection of claim 2, Tanaka further teaches that when the data is written from the disk adapter into the disk array (i.e. when the command is a data write command as claimed), the connection between the ports is changed *in one way*; and when data is read out from the disk array to the disk adapter (i.e. when the command is a data read command as claimed), the switch changes over the connection between ports *in other way* by round robin method. Therefore, Tanaka does teach about determining a path which a frame passes to be transferred between said switch and one of said disk drives, according to the type of a command included in an exchange between said disk adapter and the one of said disk drives and depending on whether the type of the command is a data read command or a data write command.

However, Tanaka failed to teach the further limitation of executing said exchange for reading data and said exchange for writing data in parallel. Hashemi, on the other hand, teaches about reading and writing data in parallel/simultaneously (e.g. see Col. 7, lines 8-16 and Figs. 9-10). Accordingly, it would have been obvious to one of ordinary skill in the art at the time of the current invention was made to implement the teachings

of Hashemi in the disk device taught by Tanaka. In doing so, the overall performance of the disk device is improved. Therefore, this is being advantageous.

As per claims 5 and 11, the combination of Tanaka and Hashemi teaches the claimed invention as described above and furthermore, Tanaka teaches that the path which the frame passes between the switch and the one of said disk drives is determined by the disk adapter (e.g. see paragraph [0088] and Fig. 1).

As per claims 7-9 and 13, see arguments with respect to the rejection of claims 1-3. Claims 7-9 and 13 are also rejected based on the same rationale as the rejection of claims 1-3.

As per claims 10 and 12, the combination of Tanaka and Hashemi teaches the claimed invention as described above and furthermore, Tanaka teaches that the destination drive port to which the frame is to be forwarded is determined by the disk adapter (i.e. the disk adapter sets destination information in a frame to be transmitted so that connection between the ports is changed over) (e.g. see paragraph [0053]).

Remarks

7. As to the remark, Applicant asserted that
 - (a) Tanaka et al. does not teach or suggest a destination drive I/O port, which is one of the plurality of I/O ports, to which a frame is to be forwarded is determined by the disk adapter, according to the type of a command included in an exchange that is transferred between the disk adapter and one of the disk drives.

- (b) Nothing in Tanaka et al. suggests that the disk adapter determines destination information within a frame to be transferred from the disk adapter to one of the disk drives, according to the type of a command included in an exchange between the disk adapter and one of the disk drives.
- (c) The switch in Tanaka et al. does not select one of port to port connection paths between a port to which the disk adapter is connected and ports to which the disk drives constituting the disk array are connected to switch each frame inputted to the switch, according to the destination information within the frame which was determined by the disk adapter according to the type of the command.
- (d) Applicants submit that the combination of Tanaka et al. and Hashemi et al. has been impermissibly made with hindsight.

Examiner respectfully traverses Applicant's remark for the following reasons:

With respect to (a), as described above in the rejection of claim 1, Tanaka clearly discloses "...the disk adapter sets destination information in a frame to be transmitted so that connection between the ports is changed over..." in the paragraph [0053]. In other words, the disk adapter in the Tanaka reference determines which frame to be transmitted/forwarded as claimed.

With respect to (b) and (c), as described above in the rejection of claim 2, Tanaka teaches that when the data is written from the disk adapter into the disk array (i.e. when the command is a data write command as claimed), the connection between

the ports is changed *in one way*; and when data is read out from the disk array to the disk adapter (i.e. when the command is a data read command as claimed), the switch changes over the connection between ports *in other way* by round robin method (e.g. see the paragraph [0053]). Therefore, Tanaka reference does anticipate the claimed invention.

With respect to (d), in response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hetul Patel whose telephone number is 571-272-4184. The examiner can normally be reached on M-F 8-4:30.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matt Kim can be reached on 571-272-4182. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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